

BOOK REVIEWS

MORE PEOPLE, LESS EROSION: ENVIRONMENTAL RECOVERY IN KENYA by M. Tiffen, M. Mortimore and F. Gichuki, John Wiley & Sons, Chichester, 1994. No. of pages: xii + 311. Price: £22.50 (pb). ISBN 0-471-94143-3.

DEVELOPMENT AND ENVIRONMENT: SUSTAINING PEOPLE AND NATURE edited by Dharam Ghai, Blackwell, Oxford, 1994. No. of pages: 263. Price: £12.99 (pb). ISBN 0-631-19394-4.

These two books present some awkward dilemmas for readers of *Earth Surface Processes and Landforms*, and could usefully be read by all who are interested in applied environmental science. The first dilemma is in the reinforcement by the first of them of the lessons provided by Ives and Messerli (1989) when they considered critically the 'theory' of Himalayan environmental degradation. These were that short-term and site-specific data cannot allow reliable generalization about human impacts in environments characterized by considerable time and space variation in natural processes, and that brief visits by western 'experts' often result in biased conclusions, both because of those experts' cultural backgrounds and their inability in the available time to monitor recovery periods. Tiffen *et al.* reach a similar conclusion by comparing 1937 and 1990 photographs of Machakos District in Kenya, showing that doom-laden prognostications in the 1930s of environmental catastrophe in the face of rapid population growth and soil erosion were misplaced. Instead, Machakos has recovered, in spite of a 3 per cent per annum population growth rate. The second dilemma is that environmental degradation of the kind reviewed by Blaikie (1985) as a consequence of 'political economy', or the recovery as charted by Tiffen *et al.*, are both largely attributable to social and economic forces, not environmental ones. Environmental recovery in Machakos, during a period of no detectable trends or cycles in external controls such as rainfall regimes, arose because soil, water and tree management for conservation and sustainable use developed as a result of the durability of social institutions and local political organization, the security of land tenure for small-holder farmers, the encouragement of increased production by improved access to local markets through infrastructure development, and access to new ideas about agricultural techniques and off-farm employment opportunities, which permitted increased yields per hectare and per person as well as increased non-farm income as a buffer against the effects of drought. The environment did not present a Malthusian constraint through some notional carrying capacity,

but rather presented opportunities that could be exploited (sustainably) in different and more intensive ways as population grew (Boserup, 1965), given conditions in which the people could adapt willingly and through grass-roots decision-making. Soil conservation in Machakos was imposed unsuccessfully in the 1930s, but was later adopted spontaneously by farmers who had never encountered extension workers. This fascinating account is supported by considerable volumes of data – at times, perhaps, too much data, in that notwithstanding the individual cases presented, it is difficult to extract any real feeling for the well-being of the Akamba themselves during the period of the study (and there must have been periods when many of their lives were subjected to considerable stress).

In the book edited by Ghai for the United Nations Research Institute for Social Development, these issues are reinforced; indeed, one chapter (by Joekes *et al.*) shows the danger of generalization by providing a case study of Embu District in Kenya, where environmental change and rural development are in a much less healthy state. However, a key theme in several of the eight chapters presenting case studies in this volume is that of the indigenous environmental knowledge that underpins community resource management of common property. There is no inevitable 'tragedy of the commons' because societies have normally evolved sophisticated procedures for managing their environments – their marine or forest resource bases, for example. Thus villagers in Marovo, in the Solomon Islands, classify over 400 fish species, 40 reef features and 60 fishing methods, and manage these last in relation to the interaction of the others (Hviding and Baines). Environmental degradation arises when commercial development is imposed from outside, and unsympathetic governments refuse to allow the right of indigenous peoples to accommodate external commercial or other interests within their existing management structures. This is evident in tropical forests when logging interests are unfettered (Colchester), where dam construction is undertaken and populations are displaced (Gadgil and Guha), or where national parks are imposed and people are excluded (Ghimire). A third dilemma is therefore that the supply of western environmental expertise to 'top-down' resource development schemes, which commonly benefit dominant urban and industrialized population groups, often undermines indigenous environmental knowledge and management and, by contributing to the collapse of existing social institutions, brings about both environmental degradation and increased poverty amongst the most vulnerable rural populations. There is therefore much to be said in favour of an alliance between environmental science and anthropology, to ensure recommendations for the

development process which are indeed capable of 'sustaining people and nature'. These two books provide valuable insights into both the general nature of such an alliance and its capacity to challenge conventional positions in specific case studies.

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COPING WITH FLOODS edited by G. Rossi, N. Harmancioglu and V. Yevjevich, NATO ASI Series, Kluwer Academic Publishers, Dordrecht, 1994. No. of pages: xiii + 776. Price: £193.00. ISBN 0-7923-2706-3.

This volume exists because of a perceived need to review two key developments in the flood mitigation field: firstly, the emergence of new technologies for real-time flood forecasting and warning, based mainly on the application of weather radar and satellite data; and secondly, the widespread shift from structural to non-structural measures, due mainly to a growing awareness of the adverse environmental effects of hydraulic works. In fact, these two themes, which are not particularly novel, occupy only a relatively small proportion of the book.

Over 50 contributors, almost exclusively from Europe and North America, have produced 40 chapters organized into six sections: historical overview, hydrologic characteristics, hydraulic characteristics, forecasting and warning, flood impacts, and flood mitigation measures. The most substantial sections are those dealing with the hydrological characteristics of floods, and the final section which appraises options for reducing flood losses. Although the total cover is wide, there are some surprises in the package. For example, despite a passing recognition of coastal flooding in Chapter One, only one contributor considers storm surge events, and there is

REFERENCES

- Blaikie, P. 1985. *The Political Economy of Soil Erosion in Developing Countries*, Longman, London.
Boserup, E. 1965. *The Conditions of Agricultural Growth: the Economics of Agrarian Change under Population Pressure*, Allen & Unwin, London.
Ives, J. D. and Messerli, B. 1989. *The Himalayan Dilemma: Reconciling Development and Conservation*, Routledge, London.

very little on the environmental effects of control structures. The section on the impacts of floods is especially thin. There are chapters on economic and environmental assessments, plus one on the public response to flood warnings, curiously misplaced from the flood forecast and warning section, but nothing on the mortality or morbidity resulting from flooding.

Given the remarkable scarcity of authoritative books on river floods and their management, compared to what is available for other natural hazards, this compendium will find an immediate role as a reference source in any library able to afford the rather high cost. But it will be used to reinforce existing knowledge because the approach adopted is essentially traditional and technology-led. Some of the best contributions are on flood estimation routines and—ironically in view of the stated context of the book—on structural control measures. The major weakness is that the contributors consistently reflect their own experience in western, developed countries. Apart from some limited comments in one chapter, nowhere is there any acknowledgement that floods exert their greatest toll in the Third World and that the most appropriate coping strategies in such countries may well be different from those described in this book.

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REMOTE SENSING OF SEA ICE AND ICEBERGS edited by S. Haykin, E. O. Lewis, R. K. Raney and J. R. Rossiter, Wiley, Chichester, 1994. No. of pages: xxviii + 686. Price: £73.00. ISBN 0-471-55494-4.

Study of the earth's polar regions has, for a variety of reasons, developed dramatically over the last 25 years. The fact that these regions are remote from most human habitation, vast and inhospitable, implies that they are particularly well suited to airborne and spaceborne remote sensing methods. The fact that they are often in

darkness or covered by cloud has meant that those remote sensing techniques that use microwave radiation, either passively, by measuring thermally emitted radiation, or actively, using some type of radar, are especially important. As one would suspect, much of the recent technological development in these fields has occurred in Canada. This book presents a detailed description of recent developments, principally in Canada, in the remote sensing of sea ice and icebergs. It is mainly organized by techniques, but it will perhaps be useful for me to list here the main parameters that are discussed. These are the detection of ice floes and